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A
PLAIN
ELEMENTARY EXPLANATION,

OF THE
NATURE AND CURE OF DISEASE,

Predicated upon facts and experience ;

PRESENTING A VIEW

Of that train of thinking which led to the Invention

OF THE

PATENT, PORTABLE,

WARM AND HOT BATH.

By Samuel K. Jennings.

RICHMOND:

PRINTED BY RITCHIE & TRUEHEART.

1814.



DISTRICT OF VIRGINIA, to wit :

BE IT REMEMBERED, that on the
L. S. twenty-fifth day of January, in the thirty-
eighth year of American Independence,
Samuel K. Jennings of the said district, hath deposited
in this office, the title of a book, the right where-
of he claims as author, in the words following, to wit :
“ A plain elementary explanation of the nature and
“ cure of disease, predicated upon facts and experi-
“ ence ; presenting a view of that train of thinking,
“ which led to the invention of the Patent, Portable,
“ Warm and Hot Bath. By Samuel K. Jennings.”
In conformity to the act of the Congress of the United
States, entitled “ An act for the encouragement of
learning, by securing the copies of maps, charts and
books, to the authors and proprietors of such copies,
during the times therein mentioned ;” and also to an
act, entitled, “ An act supplementary to an act, enti-
tled, an act for the encouragement of learning, by
securing the copies of maps, charts and books, to the
authors and proprietors of such copies during the
times therein mentioned ; and extending the benefits
thereof to the arts of designing, engraving and etch-
ing historical and other prints.”

WM. MARSHALL,
Clerk of the District of Virginia.

P R E F A C E.

ABOUT ten years ago, I was convinced, that there was too much hypothetical reasoning, incorporated with every theory of fever, of which I had any knowledge. They all, too often failed to furnish such explanation, of the grades and states of disease, as I deemed necessary, to guard against mistake. Sensible of the high responsibilities of medical men, I entered upon a course of vigilant observation, in order to detect any important point, at which our science might be deficient. Two whole years were spent, without gaining any considerable advantage. At length, however, several cases of fever occurred, of an unusual type, difficult to manage, and attended with symptoms which invited special attention to the surface of the patient. I formed several conjectural opinions, which afterwards were tested by additional experience, and corrected or established as facts directed.

In the years of 1806-7, a similar fever prevailed, to an extent, never before known in our section of the country. Several hundreds of the sick were committed to my management, affording me ample opportunity for repeating my observations. In the course of this labor, my enquiries began to assume a more systematic form. And ever since that period, my opinions have been considerably guided, by the principles which I now hold to be true. For the space of seven years past, I have paid more attention

to the surface, than any other physician of whose practice I have any knowledge, and have been in habits of making more than ordinary use of artificial heat. The steam of boiling water has often served me a valuable purpose, when my patient could sit up to receive it. But in cases of prostration, this of course universally became impracticable. Many substitute devices were tried, each of which, was more or less beneficial, according to the facility and extent, with which it could be applied. Till at length, a perfect method of applying heat, became to me a very great desideratum. In a short time afterwards, I had the happiness to hit upon the gas of burning ardent spirit, and finally upon the invention, of a portable apparatus, for conducting it to my patient. During the whole course of this pursuit, I had no other design, but that of improving my own practice. But the facility with which I have since been able to manage every grade of fever, has been such, that I cannot reconcile it with my obligations to humanity, to withhold the result of my observations from the public. It is, therefore, submitted to the patronage of benevolent and intelligent citizens, as a simple method of explaining disease, to common apprehension. It is laid at the feet of medical men, and claims no higher merit with them, than that of a little appendix to their more profound researches. For myself, I feel no solicitude. Time and trial will necessarily determine the fate of my work.

As to the apparatus itself, considered as a convenient contrivance for administering a warm or hot bath,

it needs no commendation. Every physician in town and country, must know its worth. The difficulty and delay, which attend any ordinary method, heretofore discovered, are equally obvious. By this invention, every physician, and indeed every family, may be furnished with a convenient, elegant, and delightful method of applying heat. It may be put into operation, in five minutes. It may be carried in a large pocket ; it would scarcely incommode a pair of saddle bags, in travelling. It does not weigh three pounds. It may be applied to a patient seated in a chair, or lying on a couch, sofa, cot or bed. It is used without water. And it can be safely applied to patients in the most helpless condition.

So far as I have been able to extend my inquiries, my system is original. Some experience, therefore, will be necessary, to prepare the purchaser to derive those extensive advantages from its use, which will ultimately accrue, to every one who will give it a fair and proper trial. Medical men, will find but little difficulty to comprehend me at a single reading. Others may find it expedient to devote some time and application to the work. And where is the man, who ought not to inform himself on the subject of his health? Let him avail himself of the advantage which is now offered him, and with the blessing of The GREAT ETERNAL, who holds the destinies of men, he will not be disappointed of his hope.

PLAIN

ELEMENTARY EXPLANATION, &c.

THAT peculiar energy, which supports vital motion in the living man, by some medical writers called *sensorial power*—by others *excitability*, is continually expended, and therefore of course, must be continually generated in the system.

It is expended by all the motions and efforts, of body and mind, exhibited in human life. The faithful labourer, and the diligent student, are equally sensible of the failure of their powers, through arduous and long continued application.

It is expended, by the systole and diastole* of the heart and arteries, and by all the variety of motions, which support those numerous organs and functions, the description of which, would, itself constitute a voluminous work.

And it is highly probable that it is employed as an *associate instrument*, in the act of thinking, as well

* The two corresponding motions, which receive and expel the blood.

as a *subordinate instrument*, in the performance of muscular action—in the production of those motions of the body, which are subservient to the will.

An energy so essential to life, and so continually, and copiously expended, must be perpetually supplied, or the system would perish, through its own necessary motions.

Probably, it is the grand function of the sensorium,* to maintain this energy. Possibly, this organ, should be considered a gland of superior dignity, whose office it is, to secrete this astonishing power, and through the medium of the nerves, to distribute it, to its various destinations ; or it may more properly deserve the character of an electrical apparatus, which collects and diffuses vital power, with instantaneous velocity. But it is not material to my purpose, to ascertain by what process it is accomplished. I would insist upon the truth of this proposition only, that through the functions of the brain and nerves, there is a perpetual production or generation, and a perpetual effort for the diffusion of vital power, throughout all the parts of the system.



IN making provision for so ample a supply of this important principle, it is evident, the Author of Nature had reference to an intended co-operation of certain extraneous powers, which should afford the necessary pabulum,† and act as stimuli or exciting pow-

* The brain and its appendages.

† Nourishment.

ers, upon the fibres, and vessels, and organs, of the system, so as to bring them into action, raise the action to its proper height, and maintain it through its destined period. These powers or stimuli are Aliments, Heat, Atmosphere, Light, Sounds, Bodily exercise, Thought, &c. to which may be added, the presence and motion of the blood in the heart and arteries, as also the several fluids, secreted and deposited in their various receptacles, or moving in their passage through their appointed tubes.

Through the influence of this vital power, or excitability of the system, its vessels are susceptible of feeling the impression of the various stimuli, which act upon them. And by a peculiar contractility,* with which it arms every fibre of the Heart and Arteries, Veins, Lymphatics, &c. all these vessels, in obedience to the powers of acting stimuli, perform their respective motions. Thus provision is made for the circulation of the blood, the secretion of Lymph,† and the elimination of excrementitious matter. The organic motion which is thus produced, for these important purposes, is called *excitement*.

If the quantity of vital power or excitability produced in the system, be natural, and the quantity of nourishment and stimuli, in due proportion, excitement will be equable and healthful.

In perfect health, therefore, excitement will be equable throughout all the vessels of the Brain, of

* A power or disposition, to draw themselves into narrower limits.

† A transparent animal fluid.

the Lungs, of the Liver and Mesentery, of the Stomach and Intestines, &c. of the Bones, of the Muscles, and of the Skin and cellular substance.

In maintaining excitement, vital power is expended; and the expenditure will be in proportion, to the degree of excitement, for the time being.

The application of preternatural stimuli, will produce more than ordinary excitement, and of course an extraordinary expenditure of vital power.

The system, therefore, if long oppressed by the weight of preternatural stimuli, will necessarily sink into a state of indirect debility—a state in which there is a deficiency of vital power.

By the subduction of stimuli, excitement will be diminished, and consequently vital power will be accumulated.

The same effect may be produced, by the application of certain sedative agents, such as Cold and Fear. And whenever excitement is long reduced, to a state below that which is natural, whether by the subduction of stimuli, or by the application of a sedative agent, the system rises into a state of direct debility, a state in which vital power is accumulated.

These remarks, however, though certainly true, admit only of limited application.

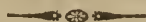
Although preternatural stimuli are calculated to produce extraordinary excitement, yet if applied in a certain gradual manner, the system will acquire an habitual capacity, to generate a commensurate portion of vital power, and by new modelling its movements, will assume a standing, analagous to that of

natural excitement. This process is performed, under the control of the same laws of the system, by which it adapts itself to different climates, and in every climate, to the diversity of seasons, modes of living, &c. which are found to prevail.*

But when the stimulant agent is powerful, and is suddenly applied, or when applied a sufficient length of time, it may overwhelm the system with all its resources for adaptation, and raising the excitement too high, produce indirect debility.

So, also, when there is a gradual subduction of stimuli, and the excitability is accumulated in a small degree only, the system by its own powers of reaction, may raise its excitement, and find a natural balance.† But a sudden and copious, or a frequently repeated subduction of stimuli, may produce a pernicious degree of indirect debility.

Whenever debility of either of these two descriptions, prevails to a considerable extent, it places the system, in a state liable to disease. And in this view, debility, is well enough said to be the predisposing cause of fever.



WHEN vital power is sufficiently accumulated, to place the system in a state liable to disease, for the sake of distinction, I will take the liberty to call it, “*predisposition with accumulated power.*”

* By the same laws, the system is saved from speedy destruction, when men shamefully impose upon it, those oppressive and poisonous stimulants, tobacco and ardent spirits.

† The loss of a single meal, or of half a pound of blood seldom much incommodes a man in pretty good health.

And when the energies of life, are sufficiently prostrated to place the system in a state liable to disease, I shall call it "*predisposition with exhausted power.*"

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IN abstracted speculations upon disease, we may lay down discriminations, and rigidly regard classical arrangement, in all our disquisitions upon the subject. But disease in its actual assaults upon the system is not always ushered in, under the auspices of either of these predisposing circumstances, wholly abstract from the other. They are commonly blended, and one or the other abounds, according to the nature of other co-operating powers, which are to be considered as remote causes of fever.

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PREDISPOSITION to disease, with accumulated power, may be induced by too much sleep, by taking in suddenly too much nourishment, as is frequently done by eating and drinking at a feast. By taking too little exercise, for the demands of the system, &c. The same or a similar state of things, may be effected by the application of certain agents which possess sedative powers. As such I shall specially consider the passion of fear, and the negative agent *cold*. It is a fact, well known to every man of observation, that fear, like cold, produces paleness of countenance, diminution of strength, increased frequency of the pulse, and convulsive trembling of the muscles.

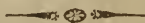
But *cold* more frequently than all other agents of this class, is the remote cause of predisposition to the disease, with accumulated power.

PREDISPOSITION with exhausted power, may be induced by a loss of sleep ; by excessive labour ; by a continued habit of eating too much, or too little ; or by eating articles of diet too stimulant, or indigestible in their nature ; by violent anger ; by grief, by disappointed love ; by intemperate indulgence in venery ; by daily dram drinking, or chewing or smoking tobacco ; by stimulant gasses exhaled from marshes, &c. ; by whole regions of Atmosphere, rendered more than ordinarily stimulant, by unknown combinations ; and by the agency of heat, in certain seasons and climates.



COLD and heat are necessarily and perpetually opposed to each other. Heat in a certain appropriate temperature, is the natural ally of life. Cold, on the contrary, is the universal companion of death. Without some degree of warmth, the vitality of the fibres cannot long be preserved. The motions essential to life, cannot be maintained without heat in a considerable degree. I feel myself at liberty, therefore, to speak of *cold* in the sequel of this work, as the common enemy of human life, which is perpetually seeking for the extinction of the vital heat of every man ; inasmuch as, in a comparative view of the temperature of the surrounding atmosphere, every man is daily more or less exposed, to the sedative effects of this agent. 'Tis true, there are many days in midsummer, in which the degree of the atmosphere, approximates towards the point of blood heat. At night, however, the thermometer universally sinks ; so as to

fall considerably below that point. When the weather becomes thus hot, the vessels on the surface, are so highly excited, by the heat of the day, that before the approach of night, the system is placed in a state of indirect debility.* The chilliness of the night, therefore, has an effect upon the vessels of the skin, though less in degree, yet similar to that which is produced, by remaining too long in a moderately cold bath. The same influence repeated day after day, must at length bring about all the debilitating effects of cold. That sense of heat which is frequently felt through the evening and early hours of a hot summer's night, affords no conclusive argument against this position. If I am not misguided in my opinion upon the subject, the following considerations sufficiently explain this apparent difficulty.



WHEN we first rise in the morning, and with the skin uncovered, approach near to a good fire, it instantly produces a painful sense of heat. If we sustain that pain a few minutes, the excitement of the skin rises, to a point at which, that sensibility of heat is extinguished, and we can make a nearer approach

* As the system is prepared to generate a certain portion only of vital power in a given time, to be equably distributed throughout all its parts—it therefore necessarily follows that much extraordinary excitement on any one part will tend to prostrate the whole. Thus the heat of summer acts on the skin and lungs only, but the increased action of the skin induces general debility.

to the fire, without inconvenience to our feelings.— If we still maintain the same distance from the fire, in a little farther time, the pain of heat will again become so great, that we are compelled to take a greater distance. If the distance to which we remove, be just sufficient to relieve the pain, a free perspiration will ensue, and the sense of heat will again become oppressive, insomuch, that it will at length become insupportable. If we then retire almost without the reach of the heat of the fire, a sense of heat is still felt on the skin, and a profuse perspiration still continues.

So the skin, heated by the atmosphere of a summer's day, passes through all these changes, though in a more gradual manner. In the evening the temperature of the atmosphere is lower, but in consequence of the intense action produced in the course of the day, the excitement of the skin, through indirect debility, falls considerably below that which is natural. Through the chilliness of evening, the absorbents of the surface are rendered weak, so that the perspiration which continues, considerably imitates the sweat of death. In death the arterial action is weak, but as it stands associated with the heart and central vessels, it is, therefore, stronger than the correspondent action of the absorbents, which commence upon the surface. And as death commonly begins upon the absorbents; the power by which the fluids are returned, is extinguished, before the impelling power of the artery subsides. The dying man,

therefore, continues to sweat, until he expires. In a similar way, through indirect debility, in a hot summer's day, the absorbents are so affected, that profuse sweating is induced. And thro' an increase of debility, consequent upon the chilliness of the night, the sweating is increased. We have seen that in the morning, a moderate degree of heat produces a painful sensation. In the morning the action of the vessels of the skin is weak, and therefore their sensibility to heat is increased. So also, after the vessels of the skin are indirectly weakened by the heat of the day, a sense of heat becomes more and more oppressive, as the debility increases, till at length the sensibility becomes so acute, that the heat of the circulating fluids brought to the surface, is painfully felt. That it cannot be the heat of the surrounding atmosphere of which we complain, is obvious, in as much as, perspiration is profuse, and must continually furnish water for evaporation. Besides, it will appear on trial, that a man sweating under these circumstances, shall find his skin cold to his own touch. The least degree of covering, increases the distress, whilst an entire removal of covering affords very little relief. Evaporation on the surface, brings this very partial relief, which, in ordinary circumstances, is all we are able to find. Fanning is, therefore, grateful, as it hastens evaporation. But the moment the fanning is suspended, the sense of heat is increased, by the increased sensibility to heat, which the fanning produces. Any degree of covering is calcu-

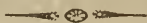
lated to retard an elimination of heat, and therefore becomes quite insupportable. In the midst of this inconvenience, commonly ascribed to the heat of the surrounding atmosphere, an approach to the fire for a sufficient length of time, to rouse the action of the absorbent vessels, up to a state of balance with that of the arteries, will correct the distress, and afford a practical argument, in confirmation of the foregoing observations.



IF such considerable effect can be produced, by the agency of the heat of one day, and that too when the seasons regularly progress, what may we not expect, when the same effects are again and again repeated, in the midst of vicissitudes of weather? And if the condition of the surface, can so completely involve the whole mass of excitement, ought not medical men, to pay more attention to this important membrane?

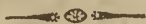
It is obvious that the skin, which spreads so broad a surface open to the agency of the surrounding atmosphere, must, therefore, be equally liable also, to come under the sedative power of cold. Destined to be the covering of the whole system, it is prepared in safety to its own existence, to undergo frequent alternations of increase and diminution of excitement. And though at one time highly excited, at another subjected to long continued collapses of its vessels, and almost to entire privation of excitement, it nevertheless retains so much vitality as to escape gangrene. If, therefore, I repeat it, the heat of one summer's day can so increase the action of the vessels of the

surface, as to bring the system into a state of indirect debility, ought we not to expect corresponding influences equally great, from the sedative power of cold? In fact the one occurrence happens, as frequently as the other, and both have been repeated from time immemorial. The great advantages, however, which might have resulted, in favor of medical science, from a due attention to these reciprocal vibrations of excitement, appear to have escaped the notice of those worthies, who have contributed so much to the enlargement of her treasures. Engaged in deep researches after truth, *observations upon the surface*, have been left for men of less ability.



I have taken considerable pains to satisfy myself, with respect to the probable proportion, which the skin and cellular membrane bears, to the remaining soft solids of the system. I have enquired of many respectable physicians. And I had the honor of a correspondence upon the subject, with the ever venerable Doctor Rush. I am, however, still left in uncertainty—Shall, therefore, satisfy myself for the present, in the supposition, that the skin and cellular membrane as spread over the surface, in many cases may nearly, if not fully amount to one fourth of the soft solids. In many fat persons it is certainly much greater. If then the sensorium continues its functions, and produces such a quantity of vital power, as is sufficient for the supply of the whole mass of the system, whilst at the same time, a proportion approximating towards one fourth part of its destined expen-

diture, is suspended through the influence of cold on the surface, an accumulation of power, must speedily be effected, to an amount, sufficient to place the system, in a state of predisposition to disease. The weight of this consideration is much increased, by the great sensibility which is brought to the skin of most people, through the warmth of their cloathing in almost every stage of life. Did mankind universally live in simple style, and from their birth put on no more than a single garment, it is probable, this membrane would acquire an habitual power, of resisting cold more effectually, or that the whole system, would be adapted to such a state of things, in which the skin should require a less portion of excitement, and of course have a less share in the formation of disease. But so long as men are raised effeminately, and the weather is subject to vicissitudes of temperature, we may expect to find the skin deeply involved in every case of predisposition.



THE progress of the seasons, may serve to regulate some further observations upon this subject.— During the severity of winter, most people defend themselves against cold by putting on the necessary additional cloathing, and by having frequent recourse to good fires. The salubrious atmosphere of winter, supports a vigorous action, and the uniformity of the weather, gives the system ample opportunity, to avail itself of its powers for adaptation, which circumstances prove effectual, to maintain a proper balance. Any momentary suspension of excitement, produced

by the sudden application of intense cold, is followed by speedy re-action, in so much, that, the pernicious effects of cold in the winter and spring seasons, are almost exclusively produced in moderate weather, when the degree of cold is not sufficiently intense, to compel the patient to have recourse to the fire, when the accumulation of vital power is not sufficiently sudden, to induce an immediate re-action of the vessels of the surface.—Intense cold, suddenly applied to any system, armed with good stock of energy, produces an immediate re-action, imitating the result of a stroke upon an elastic body ; whereas moderate cold gradually applied, insidiously takes possession of the surface, and resists a return of excitement, until the vessels of the skin are too much debilitated, for speedy re-action. During the time of this suspension, an accumulation of vital power is generated in the system, which necessarily progresses towards a predisposition to disease, with accumulated power. This is the state of things in every case of fever in its simplest form ; and such is most commonly the form of fever, as it occurs in the winter and spring seasons of the year. During these seasons as above stated, health abounds. Vital power is daily generated, to an amount, commensurate to the full demand of all the functions of the system. Hence it follows, that by such suspension of excitement upon the vessels of the surface, as is produced by exposure to cold, sometimes for one day only, an accumulation of excitability is induced, which subjects the system, to an attack

of pleurisy the succeeding night.* And this the more certainly happens, if the exposure be immediately preceded by some great exertion, through which the energies of the system, are for a short time considerably

* If every branch of the blood vessels were, in every case, at all times armed, with equal and well-poised tone, an instance of inflammation, would rarely occur. But this is not the case. A large majority, male and female, through hereditary or accidental causes, have some one or more of their organs weaker than the rest. It therefore follows, that when fever is excited to a powerful height, or is a long time kept up, the weaker vessels are always in danger. If the impulse of the heart and arteries, is made with a power commensurate to the tone of the strongest vessels, the blood will inevitably be impelled into the weaker branches, with a force sufficient to expand them, beyond their natural dimensions. This expansion of the fibres, causes the pain, and the enlargement of their diameters, gives room for a misplacing of the red particles of the blood. Hence the extravasation of blood or serous fluid, which produces the cough in pleurisy. A simple fact, will more fully explain the subject. Let a finger, for instance, receive a blow from a hammer, so as to weaken its blood vessels. The artery which conveys the blood into the finger, continues its action, as if no such accident had happened. The bruised vessels, not having their natural tone, are expanded beyond their ordinary capacity. The enlargement of the vessels, which in this case is obvious to the sight, produces the pain. And the swelling is increased at every pulsation of the artery, which is commonly said to throb. Except the cause of the weakness in the vessels only, something like this happens, in every case of inflammatory fever; whether it be determined upon the Brain, the Lungs, the Viscera or Muscles. The various changes which are effected upon the vessels and fluids, when the injury thus induced, is cured by a resolution of the parts, do not necessarily claim my notice.

exhausted. By such exhaustion there is less power to maintain that grade of excitement on the surface, which is necessary for the resistance of the sedative effects of cold, and before the system can rally itself, the enemy takes possession of its out-posts ; and predisposition with accumulated power is induced. Here then we have a case, in which there is supposed to be present, a quantity of power, more than sufficient for the performance of all the functions of life, whilst the vessels of the surface, perhaps nearly one fourth of all the soft solids, are in a collapsed state, prepared rather to resist, than to encourage a return of excitement. Of course by an effort for a restoration of a balance, the excitement of those vessels which are prepared for action, must necessarily become excessive. Anatomy has taught us, that the whole current of circulating blood, returning to the right auricle of the heart, is necessarily impelled into the pulmonary arteries, and returned again by the pulmonary veins to the left auricle, before it can possibly be circulated by the aorta, or great distributing artery throughout the system. The surface being collapsed and languid, the pulmonary veins, probably by the laws of association, or sympathy, partake of the same languor, whilst the heart and pulmonary arteries, are necessarily active, and ready to receive a determination of this accumulated power. In a few strokes of the heart, the pulmonary arteries, so completely overwhelm the languid absorption of the pulmonary veins, that an engorgement of the capillary branches

necessarily ensues. By this engorgement the whole mass of excitement is retarded and almost locked up in the lungs. Hence the chilly sensation which is felt at this stage of the disease. Whether animal heat depend upon the developement of caloric,* in the lungs, or whether it depend upon mechanical attrition, or whether it be the result of a chymical decomposition of the fluids, which is taking place in the glands and secretory vessels, or whether it be co-ordinate with excitement, and is a necessary result of the action of stimuli upon the fibres of the system—whether any, or all of these considerations are involved in the production of animal heat, it must equally follow, that there is a deficiency of this principle in the system whenever there is a deficiency of excitement.† That there is a deficiency of excitement taken in the aggregate, is obvious. The skin is pale, cold and collapsed, the lips and the skin around the mouth and eyes, are livid, and the pulse, though tense, is small and frequent. That there is an engorgement of the vessels of the lungs must also appear. There is felt a sense of fulness or tightness in the chest, respiration is quick and laborious, and as before stated, the pulse is in a state which indicates

* Elementary heat in an abstracted form:

† The heat which is felt on the surface of a patient, in a continued or typhus state of fever, affords no argument, against the truth of this conclusion. The apparent accumulation of heat, is the result of debility, in consequence of which, the fluid necessary for its evaporation is not supplied; which will more fully appear in the sequel of the work.

it. Moreover, at the height of this struggle, the pain is first felt, and frequently more or less blood is expectorated. The chilly sensation, therefore, may fairly be considered, to be the effect of a positive deficiency of animal heat. The deficiency of heat necessarily follows a deficient quantity of excitement. And the excitement is deficient in consequence of a collapse of the vessels of the surface, co-operating with an engorgement of the pulmonary arteries.

The convulsive shiverings, are produced by a translocation of vital power, from the blood vessels to the muscles. The great accumulation of excitability which has raised this terrible storm, is now impetuously seeking an avenue for its expenditure. The system defeated in its attempt to go off through the most direct and natural channel, that of ordinary excitement; to save itself from destruction, by an accumulation of excitability, according to the principles of Dr. Brown, has recourse to some other alternative. A determination is accordingly made upon the muscles, through the medium of Dr. Darwin's laws of Volition. The shivering, therefore, instead of being an alarming symptom, proves the presence of that power of adaptation, by which the system avails itself of its alternative; and so far is it from being an unfriendly movement, that it is probable, no other at this period could prevent destruction.



THROUGH this convulsive shivering of the muscles, there is brought about a very hasty expenditure of

vital power. Any violent muscular exertion continued for a few minutes only, exhausts this power so far, that it becomes difficult for the system to maintain the necessary motion of the heart and lungs.— And if the muscular struggle be continued too far, the blood vessels may be so completely disarmed of vital power, that they will fail to circulate the blood, and instantaneous death will be the consequence.— This is the state of things, when a man, or any animal through fear, runs himself to death. Pain also in a degree proportioned to the degree of its severity, expends vital power; as will be more fully seen in another place. When, therefore, through the medium of the struggle, of partial but convulsive excitement, together with the exhaustion attendant upon muscular shiverings, and acute pain, a sufficient quantity of power shall have been expended, to permit the pulmonary veins to receive and give passage to the whole current of circulating blood, the chill subsides, and the hot stage of fever immediately commences.*



FROM this view of the subject, it appears that in the chilly state of fever, in every case, the pulmona-

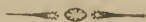
* The form of disease here described, is commonly called a pleurisy. But it is in reality an inflammatory affection of the lungs. Indeed I doubt the existence of a pleurisy as an original affection. It is true that by dissection, it is proved that the lungs sometimes adhere to the pleura. It is most probable nevertheless, that the lungs when tumid by inflammation, are kept in contact with the pleura, until the adhesion is formed.

ry vessels are in the greatest danger ; as in that state, the lesion which produces the pain and consequent expectoration of blood, always takes place. And whether the morbid action proceed so far only, as to effect a state of congestion, or whether the violence of the struggle be sufficient to rupture one or more vessels, it is the lesion exclusively, which properly constitutes an instance of inflammatory fever. For if the pain do not take place in time of the chill, it frequently happens, that all the appearances of the chilly state of fever, and the consequent hot fit pass away, without any considerable subsequent inconvenience to the patient.

It will also appear, that the greater the stock of vital power, present in the system, the more certain and powerful, must be the chilly state of any case of fever which may occur. And in the converse, the greater the prostration of the system, the more certainly such case of fever will be ushered in without a chill.

Thus we have seen, that in the simplest form of inflammatory fever—that which occurs in the winter or spring seasons of the year, cold alone may be considered as the remote cause. If violent exertion be added, so as to exhaust the energies of the system, and render it less capable of resisting the sedative agency of cold, the case will be less simple in its appearances, more tedious in its progress, and more difficult in its management. And this variation, with its concomitant circumstances, is produced by the

greater degree of debility induced, through the co-operation of the combined powers, which are allied in effecting the predisposition.



HAVING taken this brief view of fever, as it occurs in the most healthful seasons, I now proceed to consider its appearances in the early part of the sickly season.

I will first take up an ordinary intermittent ; and shall consider it a fortunate occurrence, if it should be allowed, that I have discovered a key, for unlocking the long hidden mysteries of a mode of disease, which has been thought, almost or altogether unaccountable.

In treating the progress and appearance of a simple inflammatory fever, notice has been taken of the circumstances, which occur in the chilly stage. The great Dr. Rush has encouraged me to believe, that as well in medical enquiry, as in Religion, truth is a unit. And one of the settled rules for philosophising requires, that we should refer similar effects to similar causes. Am I not warranted then to believe, that an engorgement of the pulmonary artery, co-operating with a collapsed state of the blood vessels on the surface, is equally the cause of the chilly state of fever in every ordinary case ?*

The primary remote cause of this mode of dis-

* That a collapsed state of the surface, is an universal appearance in the commencement of fever, is confirmed not by my observations only ; Dr. Cullen has predicated his whole system of the theory and practice of physic upon the same fact.

ease, possibly is the poisonous gas, which exhales from marshes, which in an indirect way, produces partial debility, or predisposition with exhausted power. But it is a fact, that in those regions where intermittents abound, whilst the days are commonly very warm, the nights are exceedingly cold for the season of the year. The atmosphere is daily heated by the rays of the sun, but the chillness of the wet earth, together with the exhalations proceeding from it, affords such a perfect conductor for the heat, that the sun is scarcely below the horizon, before it vanishes away. The heat of the day, co-operating with the remote cause, the marsh miasma, raises the action of the system so high as to induce indirect debility.—The vessels of the surface, are therefore, incapable of maintaining a sufficient portion of excitement, to resist the cold of the night. Each succeeding night brings more and more of the surface, into subjection, to the sedative power of the great common enemy, till at length the out-posts of the system are so completely conquered, that tho' the excitement, considered in the aggregate is less than natural, yet it is confined to limits too narrow, for the expenditure of the accumulated determining powers of the system. An engorgement ensues, and the appearances of a chill as described in the foregoing disease, necessarily follow. In this case, however, no lesion takes place in the lungs. Possibly the tone of the pulmonary artery, may be stronger than in the former instance, but most probably, the debility which has been previous-

ly induced, is such, that the utmost effort of the system, is not sufficient to produce either a congestion or rupture of the vessels of the lungs. And in this particular alone, consists the difference, between a paroxysm of an intermittent, and the first effort of inflammatory fever.

It is true, a further difference may be marked, with reference to the remote causes of each. Cold alone produces the predisposition in the one case, leaving the system armed with the whole stock of healthful power. In the other, a debilitating agent, to a certain degree disarms the system of its powers, subjecting it to the morbid influence of cold, whilst the energies of life are too much exhausted to struggle with sufficient violence to produce lesion.

The periodical movements of an intermittent, still remain to be considered. If an adequate accumulation of power is generated, by the suspension, produced by the cold of one night, to charge the system, sufficiently for the production of a febrile storm each succeeding day, the fever will put on a quotidian form. If it require two nights for collecting the necessary stock of power, the form will be that of a tertian. And if three nights be necessary, for the production of a similar state of things, we shall have a quartan. If more than three be necessary for raising the stock of power so high, as to produce fever, it would seem that the accumulation of each night, is expended each succeeding day. Any other diversity as to the severity of the attack; the duration of the

chilly or hot stage ; the difficulty which may attend the cure, &c. must depend on the power of the primary remote cause, and on the various temperaments of different patients. Thus it appears, that upon principles of unity, there is no difficulty in explaining the phenomena of the chilly state of fever, under whatsoever ordinary form it may appear. And the same explanation will apply as well to autumnal as to vernal intermittents.*



THE same principles will apply in an explanation of every grade of remittent fever. There must be a difference, however, in the power of the remote cause, by which each grade is produced. For if the degree of debility which is previously induced, were no

* It is possible, indeed it is probable, that after frequent occurrences of the paroxysm, from the cause as above stated, the ordinary laws of association may claim a place, maintaining those oscillatory movements of the system, which are sometimes extended through many months. It is also possible, that a torpor of some of the viscera, according to Dr. Darwin's opinion, may sometimes be the cause of an accumulation of energy, and produce or hold a share in producing and maintaining, a similar mode of fever. The pressure made upon the large blood vessels, by the weight or distension of an extensive abscess, may sometimes occasion similar appearances. So also, in inflammatory affections of the liver, mesentery or uterus, there is such an introversion of excitement, and such an extensive retardation of action, as always produce chilly sensations. But none of these instances furnish any sufficient objection, to the mode of explanation which is here given.

greater in the one than the other: Similar causes will produce similar effects. But as the heat of summer increases, the volume of poisonous gas is extended, and its violence increased. The system in the mean time, exerts itself in its powers for adaptation, and from time to time spins out its powers, struggling to be able to meet the increasing mandates of the stimuli, which act upon it, just as a man can compel his animal system to adjust itself to the pressure, of a daily increased dram of ardent spirits, till at length, through the co-operation of some additional stimulant, casually or artificially applied, or through the exhaustion consequent upon some extraordinary exercise or labor, or finally through some unusual change in the temperature of the weather, cold, the common enemy, takes possession of the out-posts of the system. The excitement retires, to limits, narrow in proportion to the existing debility, and the excitability of the central vessels which remain in action, is elevated sufficiently for the production of fever. But because of the exhausted state of the sensorium, the effort is seldom strong enough to produce a perfect ague, in the commencement; and not many distinct appearances of chill, are observed in the succeeding exacerbations. It would seem, that the stimulant or hurtful agent, which produces the exhaustion of vital power, continues to act upon the system, day and night, and that, at the close of the first and every succeeding struggle or paroxysm, the predisposing circumstances of the case, are becoming more and

more aggravated, and that through the daily increase of exhaustion, the system is less able to impell the blood, into the pulmonary vessels, with the force which is necessary to produce the chilly state of fever. I have stated, that the hurtful remote cause, is to be considered as continuing its agency upon the system, day and night. This continual pressure, together with the ordinary stimulants which prevail more in the day than in the night, causes an increase of excitement about mid-day. As the day declines, the subduction of stimuli, and the progressive exhaustion of the energies of life, cause the action to abate. The sedative power of the temperature of the night, which is always comparatively cold, again brings about the same train of things, which at first constitutes the predisposition, and arms the system, for a paroxysm of fever. In consequence of the accumulation for the night, the pleasant stimuli of the morning, produce comfortable sensations to the patient, as if he were approximating towards a balance of excitement, and for a very short space, there seems to be an obvious amendment. But as the day advances, the remote hurtful agent, together with the ordinary stimuli of the day, again unite their powers, over-rule the excitement, and drive the sinking system, through the same routine of motions, which constitutes an exacerbation of fever.

NOTE.—Exacerbation—Paroxysm; are two technical terms; each of which signifies a fit of fever.

The difference, therefore, which obtains in an ordinary intermittent and remittent form of fever, appears to be this:—In an intermittent, the system taken in the aggregate is partially exhausted by the remote cause, yet through the great disparity of temperature, between the day and night, in regions where intermittents abound, a state of predisposition is formed, whilst there still remains sufficient power to produce an effort, not far inferior in force, to that which constitutes simple inflammatory fever. In a remittent, the system, taken in the aggregate, is much more exhausted, whilst through the lesser disparity of temperature between the day and the night, the system is able to maintain a balance of excitement, till the common enemy takes a more extensive possession of the vessels on the surface. And when the moving vessels are sufficiently charged for raising a fever, the system is too much exhausted to assume movements, as nearly imitating those which constitute a simple inflammatory fever. It may probably be asked here, if the out-posts of the system, in a remittent form of fever, are more completely in possession of the common enemy, how happens it, that the skin is often as hot or hotter in this, than in an intermittent? I answer, that in every case where there is much prostration, the skin is so far deprived of excitement, that the moisture necessary for conducting off the heat which is eliminated from the system, is not supplied. And as a bottle filled with boiling water, and kept properly dry, will retain its heat,

much longer than another which is continually moistened, though both are within the same temperature, so a fever with a dry skin, is always marked with preternatural heat. But it shall be found that altho' the surface is hot, the vessels of the skin and cellular membrane are collapsed, and therefore that the heat is not the result of an increase of action on the surface. Moreover it is a fact, that by an application of cold water by affusion, or by the means of a wet sponge, the accumulated heat may be speedily evaporated, and that it will require a length of time, proportioned to the degree of existing debility, before a similar accumulation will again be collected; consequently it cannot be the result of a preternatural heat at all. It must, therefore be a mere retention of such portion of this principle, as is necessarily eliminated; so long as life can be preserved, although the quantity present in the system, taken in the aggregate is less than natural. So that I am at liberty to assert, that with the exception of cases of simple inflammatory fever, and those which particularly concern the skin, as scarlet fever, measles, small-pox, &c. the more feeble the excitement in fever, until death commences, the hotter the skin will appear to be, at certain intervals.

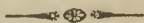


FEVER, which in the commencement may be considered strictly remittent, if improperly managed or neglected, frequently degenerates into a continued

form.* This change is wholly the result of increasing prostration. And if the remote cause be armed with sufficient power, and continue to act upon the system long enough to produce a certain degree of exhaustion, the mode of fever which takes place under such circumstances, will be continued from the beginning. In consequence of the great debility, so gradually brought about in this case, the common enemy gets more complete possession of the out-posts of the system—that is, a more extensive collapse of the extreme vessels takes place. The whole stock of moving power is contracted into narrower limits.—The action of the vessels within those limits is therefore perpetually more or less above par. But the great mass of collapsed vessels, maintain such a perpetual and effectual resistance against the feeble efforts of the system to maintain its balance, that nothing is gained. And in fact this grade of fever might more properly be considered, a state of great exhaustion of vital energy, than that of great febrile action at all. If the sensorium can maintain its functions, until the hurtful agent pass away, or till by rest and management, the necessary adaptations can be accomplished, the patient may recover. But if the hurtful power of the remote cause continue its pres-

* Is it not strange, that physicians should for ages have witnessed the transition of disease, out of one form into another, and yet doubt of its unity!

sure, until the sensorium is sufficiently exhausted, it necessarily terminates in death.



If the remote cause be more gradually applied, so as to give longer space, for effecting an appropriate adaptation, and of course more fully to exhaust the struggling powers of the system, a form of fever will ensue, very similar to the foregoing, but with a more entire abandonment of the surface, assuming the shape and appearances, which are commonly called typhus. And it will be more or less gravid or mild, according to the power of the remote cause.— And if much improper evacuation be effected, there will speedily follow, a *subcultur tendinum* or a nervous twitching of the muscles.

Such is the gradation and appearance of disease, as it occurs under the influence of ordinary remote causes, throughout the course of the seasons. Some other modifications will be considered each in its proper place.



I HAVE chosen to commence my explanations of fever, by a consideration of its appearances in the form of an ordinary pleurisy, because this is unquestionably the simplest form of disease; and because in my apprehension, it affords a key, for an explanation of the chilly state of fever, in whatever season, or by whatever remote cause it may be produced.— And if I mistake not, by this method an easy and natural explanation of disease in any of its forms, is

furnished. But this will more fully appear, when I consider the method, proper to be pursued, for effecting a cure.

Before I enter upon this part of my work, that I may be distinctly understood, it is necessary to give a brief exhibition of my view of the *modus operandi*, or the manner of operation, of some of those medical agents, which I have found to be most useful; and lay down some instructions, by which to predicate an appropriate intention in any given case.

To prescribe judiciously, it is necessary, first to fix upon some definite object, which ought to be accomplished, and then select such an article, or preparation of medicine, as is known most certainly and safely, to produce the object proposed.

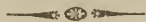


For instance, it might be proper to know whether any case under consideration, should be referred to the standard of predisposition with accumulated power, or the contrary. Then if the case occur in winter, or in a healthful season and region, if the patient have always enjoyed good health and vigor, and if he were suddenly affected with chill and languor, with dull heavy pain in the back and limbs, &c. there would be very little hazard, in venturing upon an opinion, that such a case should be considered an instance of "predisposition with accumulated power."

To judge still more accurately, of the probable quantity of accumulation present, enquiry should be made, respecting the temperature of the weather,

the duration, and circumstances of the exposure ; the quantity of cloathing ; and the various artificial means which may have been used, to counteract the influence of cold. The patient's skin should be carefully inspected, in order to judge of the probable extent of the collapse, which may have taken place.* And special attention should be paid to the state of the pulse, to judge of the quantity of excitement present in the system, and of the probable degree of power, which is likely to be exerted for the restoration of a balance.

In a case of this description, it is obvious, that the intention ought to be in some way, as expeditiously as possible, to restore a return of excitement to the surface, so as effectually to drive the common enemy from his possessions, and then extinguish any remaining accumulation of vital power, which might be found afterwards to prevail.

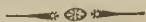


IF the case occur in a sickly season, or in any place when some alarming fever for the time being prevails. If the patient have gradually declined, so as to have been lingering under a sense of weakness, for a consi-

* In making the investigation here proposed, I never fail to pay as much regard, to the state of the veins as they present themselves to the eye, as I do to the state of the artery, for determining its force, &c. In cases of obstinate collapse, the veins cannot be filled by tying on a ligature in the way it is done in ordinary blood-letting.

derable time before the symptoms became serious, and especially if there have been a daily disposition to be near the fire, or within the influence of the rays of the Sun. it may be safely concluded, that this is a case of predisposition with exhausted power. In order to judge of the degree of debility present, and of the extent of the conquests made by the common enemy, all the foregoing enquiries ought to be made, and if possible a still more accurate attention should be paid to the state of the pulse, that any change which may be expected may be properly understood.

In a case of this description, it must be obvious, that the first intention should be, to regain possession of the out-posts of the system, and in some way to hold them, till the necessary strength can be recovered, and healthful excitement established.



If the case under consideration should have passed beyond the stage of predisposition, and the fever have actually formed, some additional circumstances come into view.

In every case of fever with accumulated power, we necessarily have an instance, in which the quantity of excitement rises above par, and the excess above ordinary excitement, will be in proportion to the existing accumulation. If such excess be great, there may be danger of a pernicious lesion, or a destructive stretching or rending of some of the vessels important to life. And the degree of this danger may be known, by the

tension of the artery, by the difficulty of respiration, and by the severity of the pain. Such tremendous instances, in which the violence of excitement overwhelms the functions of life—in which the Brain or Lungs are so suppressed, that the patient becomes speedily insensible of his distress, are exceptions, which will require the immediate aid of a skillful practitioner.

In a case like this, it is obvious that the first intention of the physician should be, to reduce the power of excitement, with such expedition and decision, as is necessary to prevent threatened lesion, or if lesion have already taken place, to prevent its further extension. The out-posts of the system in the mean time, should be carefully recovered and maintained, and any degree of accumulated vital power, should be speedily extinguished.

AGAIN, if fever with exhausted energy have actually taken place, it will be found, that by the agency of the remote cause, together with the exhaustion attendant upon feverish excitement, the system is every moment, more and more prostrated. Of course it must follow, that the first intention in such a case, should be to correct the feverish excitement. But this is to be done in a way having a proper reference to the nature of the predisposition. By the supposition of the case, the excitement of the vessels actually in motion, is more or less excessive, because of its confinement to limits too narrow for the demands of

existing vital power ; whilst at the same time the quantity of power, taken in the aggregate, is less than natural. The intention, therefore, should be first of all, carefully to recover the out-posts of the system ; so far only, however, as shall afford the degree of expansion to the excitement, necessary for the complete expenditure of existing vital power, for the time being. And any subsequent assault from the common enemy must be prevented, till the necessary time shall be gained, to permit the system, to adjust its functions, to the circumstances of the season or climate, or till it shall acquire the necessary adaptation to bear the pressure of the remote cause.



IF a man in habits of drinking ardent spirits, or one with a fat personage, or a healthy man immediately after great fatigue, should be so exposed to cold, as to bring on a state of predisposition, though in the healthful season, his case will assume a mixed shape, in some degree imitating the form of fever as it occurs in the sickly season. The common enemy will be found to have taken deep possession of the out-posts of the system, and re-action will be considerably languid. The fever, therefore, will assume the shape, commonly called a bilious pleurisy, or some other form of bilious inflammatory fever.

Here the intention should be, first to take possession of the out-posts. This done, in most cases, there will still remain some excess of excitement—this ex-

cess should be put down for the time being, and the necessary arrangements should be made, to prevent any further attack from the enemy. Afterwards, still maintaining the surface, the excitement must be regulated from time to time, according to circumstances.

The bilious appearances in such a case, are the result of a powerful introversion of excitement, which commonly attends, producing more or less engorgement of the vessels of the liver or mésentery. In such a case, the practice must necessarily be similar to that which is required in common bilious fever.—Not only ordinary cathartics will be requisite, but more or less repetition of such as are considerably drastic, will be found indispensable.

A SIMILAR case may occur in the sickly season, when a man armed with considerable vital power, comes under the influence of a sickly atmosphere, and by some excessive effort in labor, running or riding on horse back, or by drinking ardent spirits, suddenly induces a sufficient degree of prostration to produce a fever. The fatigue together with the power of the sickly agent, produces a sudden exhaustion of this vital power. But as the system has not long been laboring in her powers for adaptation, to adjust her movements to the sickly region, the sensorium is sufficiently active to produce an effort of considerable power. Hence, when the reaction or struggle for a restoration of a balance commences, appearances very

similar to those which occur in a case of bilious pleurisy, frequently happen. In such a case, the intention should be similar without regard to the season of the year. Whenever the excitement has abandoned the surface, it should be made to return. Any excess of excitement should be put down. Any accumulation of excitability or vital power should be extinguished.*



It sometimes happens that in consequence of some peculiarity in the system, whether by hereditary or accidental causes, when a predisposition to disease is formed, a destructive determination to some one organ, or to some particular part of the system is the result. In such a case, the intention as it respects the general system, should always be the same as if no such determination had occurred. Some additional and subsequent intention, however, may be found necessary, in order to perfect the cure. Thus it is, in a case of pleurisy, for instance: In addition to the ordinary remedies, for reducing the violence of excitement, it is often necessary to draw a large blister over the region of the pain. In this case, one intention is to raise an external irritation on the surface, sufficient to counteract the irritation, which is

* Who that carefully considers the facts, upon which this clause is predicated, can fail to perceive the strongest evidence, in favor of the unity of disease?

kept up by the internal injury, sustained upon the vessels of the lungs.

And sometimes it happens, that whilst there is a disposition in the system to determine its powers to some one weak point—there is a proportionate disposition to abandon others. In every such case, the intention should be to equalize excitement, throughout all the vessels of the system.



IN every case of disease, so long as there is sufficient energy in the system to sustain the shock necessarily attendant upon it, one leading intention should be, to remove all feculent matter, as often as it accumulates sufficiently to irritate the system. The skin and mouth should therefore be carefully washed as often as there is need. And the bowels should be aided with appropriate cathartics.



AFTER disease has progressed so far, that the system is much enfeebled in its powers and movements, it frequently becomes necessary, to afford the aid of some artificial stimulant. In such case, the intention should always be, to institute an artificial balance of excitement, upon a grade commensurate to the several peculiarities of the case; endeavoring to bring the artificial arrangement, to a state, as nearly analogous to that of health, as circumstances will admit, and then carefully to maintain it, till by suitable nourishment and sufficient time, real health may be recovered. Each of these various intentions, should be

urned as often as the existing state of things makes it necessary and proper, without regard to the name or duration of the disease.



REMEDIES or medical agents are useful and valuable, therefore just so far only, as they can be depended upon with certainty, for the accomplishment of any proper intention in the cure of disease.

I shall consider those proposed, in connexion with such practical observations, as may enable the reader, definitively to judge wherefore, when and how far, each of them should be employed.

I shall not regularly pursue, the classification commonly observed by writers on *materia medica*, but introduce each article, in that form and order, in which it is present before my own mind.

Blood-letting is a remedy by which excitement is completely placed within the control of art. I have considered the blood as one of the natural stimuli, upon which life depends. By loss of blood, therefore, excitement is reduced, and that in proportion to the quantity lost, except only in certain cases of depression, in which through an engorgement of some of the vessels, excitement is confined. In such a case, loss of blood to a certain extent, may be followed by an immediate increase of excitement. But when there is no such depression, it must universally follow, that by loss of blood, excitement for the time being, will be diminished. Therefore, when excitement runs so high, as to produce lesion, or threaten to produce

it, and especially when, through the violence of the assault, time is not allowed for the trial of other alternatives, blood-letting should be employed. And upon the same intention it may be repeated, as often as the case may require.

When there is good reason to believe, that the energies of the system are sufficiently active, to produce a speedy and effectual re-action, so as by one universal struggle to recover all the posts which may have been taken by the enemy—then as a copious blood-letting produces great momentary suspension of excitement—by this suspension, excitability is accumulated to such a pitch, that the system is charged for an effort by which it finds an immediate balance, or an approximation towards a balance of excitement. This is often effectually done in the time of the predisposition, or early stages of fever.*

Also when there is a morbid generation of vital power, or when there is an obstinate inflammatory determination to some particular organ, or part of the system, it may be frequently repeated for the purpose of producing and maintaining a state of debility, till by time and management, the morbid action may be made to subside, and a complete balance can be established.

One of three intentions therefore ought to direct, the use of the lancet. To reduce excitement in or-

* The blood glows on the surface, after such an instance of blood-letting, by the same laws, which produce that effect after using the cold bath, in an appropriate way.

der to guard against threatened lesion—Indirectly to produce a new action thro' the accumulation of vital power—Or to induce a certain degree of direct debility, in order to render the system more manageable, that is, more susceptible of any counteracting impression which may be intended.

NOTE.—That although a copious blood letting taken from a large orifice, has the most effectual tendency for the moment to induce an accumulation, yet it must follow that by loss of blood, in the end, there will be a commensurate loss of vital power.

Whatever excitability or vital power is, it must in some way be generated in the system. And if the system be robbed of its most essential nourishment, it must fail to generate this power in natural quantity. And therefore altho indebility induced by blood letting, comparatively speaking, is always of a direct kind—yet it would be absurd to suppose, that a continued accumulation of vital power, would follow a great and repeated loss of blood. It should therefore be remembered, that when great losses of this fluid have been sustained, such management will be requisite, as has a tendency to replenish the loss ; at the same time, that artificial stimulants are used, to supply the place of a natural one, so important as the blood. For altho' the system is truly said to be, in a state of accumulated power, and therefore needs the balancing influence of an appropriate stimulant, yet opiates, ardent spirits, and the like, must not be relied on, without the addition of suitable nourishment, otherwise the system will sink into a state of indirect debility, and that of the most dangerous kind. Under such circumstances therefore, whether brought about by accident, or by sudden or long continued hemorrhage ; wine, soup, sago, and the like, ought always to be used at proper intervals, between the repetitions of the necessary opiate doses.

Puking is a remedy which reduces morbid excitement, and has a very strong tendency in many cases, by the storm which it raises, to balance the motions of the system. It may be used to evacuate the stomach, when at the same time, there is good reason to suppose, there is an induced accumulation of vital power. In fact, when there is much exhaustion of vital power, emetics fail to produce their intended effect. On the contrary, they increase the debility of the intestines, and produce colliquative diarrhoea.

In most cases, where blood-letting is proper, an emetic* might immediately follow the loss of blood with advantage. By the bleeding then, is brought about a diminution of excitement—of course an accumulation of vital power. The circumstances which make blood-letting necessary, commonly forbid the use of ordinary stimulants, which might otherwise be employed, for preventing any morbid accumulation. By the painful nausea and convulsive motion of the stomach and abdominal muscles, the desired expenditure may be frequently and safely produced.

One of three intentions, therefore, ought in every case to preside over the administration of an emetic. Either to shock the system, with design to overwhelm any morbid action present—To evacuate the stomach—Or to extinguish any morbid degree of vital power, from time to time generated in the system.

* Emetic medicines, are such as excite vomiting. Ipecacuana perhaps is the best article of this class. To be given in dose from 5 to 30 grains.

CATHARTIC remedies, should be used with an intention to evacuate the intestines. And as there are in use, various articles, of different powers, some one should be chosen, or such a combination of two or more, whose known powers, may most accurately meet the intention. In robust cases, with violent morbid excitement, some drastic dose should be preferred, as jalap and calomel. If any degree of engorgement, is justly suspected to have taken place in the liver or mesentery, a dose or two, of articles still more drastic may be profitably used; as aloes, gamboge and calomel combined. Afterwards, in ordinary cases, castor-oil or rhubarb with salts, alternated with doses of calomel, may answer the intended purpose. If the case be chronic, but marked with sufficient vital power, Alkaline* medicines may be combined or interspersed with other cathartic medicines. If the bowels are inflamed or the patient much exhausted, olive oil, cold drawn castor-oil, manna, cream of tartar, Rochelle salts, tamarinds, or magnesia, &c. ought to be preferred. In cases of infants, rhubarb with magnesia warmed with a little essential oil of anise, or when this might be too stimulant, a little olive oil, or manna, or an infusion of rose leaves, ought to be exclusively used.

In the progress of fever, it is necessary to pay strict

Cathartics, are purging articles.

* Alkaline medicines, such as salt of worm wood, salt of tartar, salt of amber, soda, &c.

attention to the state of the bowels. Irritating matter, retained in the alimentary canal, might keep up a feverish action, when every other arrangement has been made, favorable for a cure.



DIAPHORETICS, or sweating medicines, ought to be used, when the intention is, to restore excitement to the surface ; and when the system at the same time can safely be placed under the influence of an artificial stimulant. Perspiration can be induced on the system, when in two different states. In a state of direct debility through the loss of blood, or through the sedative agency of cold, if not too long continued, certain gently stimulant means, especially when aided by heat, will excite the system, producing an increase of arterial action, which will ultimately extend its influence, to the extremities of the capillary vessels.—The arterial action thus artificially raised, will necessarily, for a time transcend the action of the veins. During the continuance of this want of balance, extraordinary moisture will be exuded—that is, perspiration will be continued.

Again, if the energies of the system are entire, and the organization of its vital parts is sound, by the agency of similar means, with the aid of some additional heat, a profuse sweating may be effected upon the principles laid down in the foregoing remarks upon the skin. By the power of the preternatural stimulant, used for the purpose, indirect debility is in-

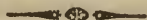
duced. But as the heart and arteries are held under the influence of this artificial agent, the failure of power will first be perceived in the absorbent system. Hence it follows, that a sweat induced in this way, sometimes produces morbid effects. The exhaustion of vital power, through the stimulant agency of the means employed, and the loss of circulating fluid, through the profuse perspiration which is induced, may co-operate, so as to prostrate the system, as low as an excessive loss of blood would have done. Besides, in bringing about this state of things, any weak branch of the blood-vessels will be endangered; and when it is accomplished, the system may be left in a state of predisposition with exhausted power.—Diaphoretic medicines, therefore, ought to be used with the same circumspection, and for the same purpose as any ordinary cordial, except only when the intention is to raise excitement on the one hand, and at the same time deplete the fluids of the system on the other, so as to institute and establish a new action. If this intention be judiciously managed in the forming stage of disease, it is frequently effectual in correcting the morbid action at once. Very great accuracy of judgment, however, is necessary to guard against mistake. And, therefore, heavy sweats ought never to be given in this way, except by the hand of experience.

ANTIMONIAL preparations,* have commonly been considered as important diaphoretic agents. For many years I have not used them with any such intention. In my opinion they are valuable, chiefly on account of their efficacy in extinguishing the vital power of the system. Hence it is, that they are always pernicious in those cases of fever, which are marked with sufficient energy. For the same reason, they are always pernicious, in those cases, with great prostration; in which, instead of inducing any thing like a diaphoresis, they are followed by collaquative diarrhoea. Whenever they produce diaphoretic effects, it is done in the following manner:—The sudden extinction of vital power on the stomach, produces general debility, diminishing the action of the absorbents on the surface, by which the arterial action over-runs that of the veins, producing diaphoresis.

MERCURY is become a very fashionable medicine. As it exists in the form of calomel, it is a valuable cathartic, when the intention is to evacuate the bowels, and at the same time produce an increased discharge of bile—an effect, which in ordinary cases is so completely produced by this article, that it might almost claim the dignity of a specific. But it so imperiously extinguishes vital power, that it is utterly inadmissible, in every case of great prostration. In

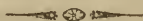
* Antimonial wine, tartar emetic, are the two most commonly in use.

that grade of fever, in which the energies of life are exhausted down to the state of typhus, a single dose of this agent, has in many instances, produced an unconquerable colliquative diarrhoea. When there is a disposition in the system to direct a morbid determination upon the liver or mesentery, well regulated repetitions of calomel, will be found highly important. By procuring an extinction of energy on those parts, for a sufficient length of time, aiding the intention by blood-letting, and other cathartic doses when necessary, such morbid determination is most effectually corrected. And this will the more certainly be done, when the repetitions are made, once every sixth hour, which is about the period, during which, calomel maintains its stimulant power.



IN cases of bilious pleurisy, and ordinary bilious fever, in which there is need of disarming the system, of that portion of power, which is exerted in maintaining a morbid determination upon the liver and other viscera, large doses of calomel, daily repeated, have often been found highly important, if not indispensable. In these cases also, if an appropriate dose were repeated once every sixth hour, the intention would be more speedily and effectually accomplished. The same mode of administering this remedy, would also be found most effectual in that form of located disease, which is commonly called bilious cholera.— And here it should be remembered, that aged persons, and such as are prematurely worn out by intempera-

rance, as well as all those who are prostrated by disease, have too little vital energy remaining, to bear the exhausting powers of large doses of Calomel.—For want of this precaution, life might be lost by a single dose.



A SALIVATION, produced by the use of mercury, is deemed an important remedy, in the cure of disease, in some of its forms ; especially those, which affect the glands of the system. The mode of its operation in this respect, may therefore deserve remark.—When the system is permanently placed under the power of this agent, its first effects upon the blood vessels, are obviously inflammatory, in so much, that in many cases, the intention would be defeated, if the inflammatory appearances were not put down by blood letting. It would seem, that by this article, a peculiar disease is induced upon the blood vessels, which probably acts with equal power, upon every branch of the arterial system, beginning at the centre, and speedily progressing towards the surface. From this circumstance arises its efficacy in breaking a morbid determination of excitement.—It compels the actions, to assume an equable determination, upon every part of the system. It would seem also, that the irritation, which is first excited in the artery, continues to progress, till by the ordinary communication, it passes over to the vein, and produces an increased action in the secretory vessels. And this effect, in order of time, takes place, after the arterial action has in

some degree subsided, so that the arterial action is diminished, at the same time that the action of the absorbents is increased. And in this state of things the deobstruent* effects of mercury, probably, are accomplished. The salivary glands as well as the whole mass of glandular vessels, are equally roused into increased action, but as the secretion which is accomplished by those glands, is destined for the lubrication of the mouth, this obvious circumstance, together with their size and number, conspire to induce a belief, that mercury is armed with a specific power, of producing salivation.

If this view of the subject be correct, then it will follow, that some appearance of salivation is necessary, to prove, that the glandular system is sufficiently roused, to meet the intention—And that the degree of salivation induced, may always serve as an indication, of the degree of extraordinary secretion, which may be going on in the whole train of glandular action.

When disease is cured by the agency of mercury, it must be accomplished by some one or all of the following effects. By its tendency to exhaust vital power, large doses given in the commencement of disease, sometimes immediately extinguish any morbid accumulation, and hasten the restoration of the balance of excitement. I have seen this effect completely ac-

* Deobstruent. Having the power to remove obstruction, or according to an old opinion—Having the power to resolve viscidities.

complished, without any extraordinary catharsis.* By the same mode of operation, when given in appropriate doses, and repetitions, it meets and extinguishes any local accumulation of vital power, on any one of the viscera, and corrects the error, by an indirect effect, which in some degree operates like topical blood-letting. Or, by its imperious sway in exciting equable action, first exerting its powers upon the artery, and presently also upon the vein, it gradually brings down the whole mass of excitement, to a point, from which a healthful action may commence, and progress in safe convalescence, towards a complete recovery. And one of the best advantages attendant on its use, in this—that in the order of its operation, the action of the absorbents is greatest, after the stock of energy present in the system, has been considerably exhausted. It is possible, however, that this order is inverted, when the application is made externally by way of friction, and therefore, in most feeble cases, the application by friction should be preferred.



COLD is frequently employed as a remedy, and with very good effect. The great certainty with which it corrects the pain, attendant upon external inflammation, is known to every one. Upon the great sedative powers of this agent, is predicated one of the leading principles of this essay.

The application of cold will never fail for the time

* Catharsis, purging.

being, to diminish excitement, and that in proportion to the extent and continuance of the application.— Much has been said of late, of its great utility, in the cure of fever, in hot climates. And when judiciously employed, there can be no doubt of its power.

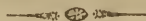
In every form of fever, with dry hot skin, it is useful at proper intervals, to cool and moisten the surface with a sponge or cloth, wetted with water, or with spirit and water, or with spirit alone. By this method, artificial moisture is furnished, and the heat retained upon the surface, is quickly evaporated.

In certain cases of malignant fever, where the remote agent is so awfully stimulant, as to threaten a fatal extinction of vital power, it may often, perhaps always be useful in the commencement, not only to subduet from the natural stimuli of the system, but also to secure frequent suspension of excitement on the surface, by copious affusions of cold water. Regard must be had, however, to the subsequent reaction of the system. For if the surface long remain in a collapsed state, some fatal determination upon the brain, or lungs, or mesentery, might be the consequence.

And here by the way, I would lay down an infallible rule, by which to judge of the propriety of using the cold bath.

When the system feels dull and heavy, with some sense of giddiness of the head, and especially if this state of things comes on without any known cause, such as intemperance, loss of sleep, and the like, it

may be taken for granted, that there is present, some stimulant agent of considerable power. Under such circumstances, the bowels should first be satisfactorily evacuated. Then if the dullness and giddiness remain, the bath may be tried. If the application be appropriate, in a few minutes after wiping and putting on ordinary cloathing, a glow of heat will be felt on the surface, and the veins on the extremities will be filled with blood. But if a collapse of the surface should follow the experiment, and a chillness long remain it may be taken for granted, that there is already so much debility prevalent, that the necessary re-action, cannot take place. And in every such instance, recourse should be had to the fire, to correct the ill effects of the intended remedy. When this experiment fails, it would always be prudent, to avoid every kind of labor or exercise ; in fact, to keep in bed, until the sickly agent so pass away, or the system so avail herself of her usual adaptations, as to recover ordinary strength. But more of this in the sequel.



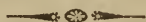
HAVING advanced thus much upon some of the most powerful agents, commonly in use, for the correction of morbid excitement, I now proceed to notice some of the remedies, which are most valuable in controuling the system, when debility prevails.

Debility, through loss of blood, is best corrected by giving immediately, an appropriate dose of opium, and repeating it once for every sixth hour.—

Opium is always stimulant, and is durable in its effects. Hence, also, the danger which almost inevitably attends its use, in cases where too much excitement prevails, as also, when given without previous and sufficient evacuation in the time of predisposition to disease. And hence the benefit which has sometimes been gained, when the system by art or otherwise has been placed in a favorable state. By rousing the energies of the system, and compelling the whole mass of vessels, with one consent, to perform the necessary motion, in the course of a few hours, the lost balance of excitement has been recovered, and a severe attack of sickness effectually prevented.

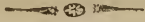
In cases of fever of a low type, small doses of opium, are sometimes indispensable. Here the intention is to sustain the feeble powers of the system, whilst she is laboring to bring about the necessary adaptations, and to enable her to sustain the pressure of the remote cause of her disease, or to hold up her sinking head, till the sickly agent pass away. But in this state of things, the greatest circumspection is necessary to guard against an inappropriate production of excitement. All avoidable filth must be removed, the intestines must be continually kept in proper condition, and the most suitable nourishment regularly supplied, such as the best wine, tapioca, sago, whey, soup, &c.

OTHER stimulant articles, less durable and powerful in their effects, are sometimes also found useful and necessary, such as essence of pepper-mint, compound spirit of lavender, gum camphire, Virginian snake-root, Russian castor, vitriolic ether, volatile salt, &c. Each of which, is to be preferred, according to the particular state of the case. If the disease have been produced under circumstances which induce great exhaustion of vital power, opium is generally inadmissible, whilst some one or more of those articles, which are less durable and more diffusive in their effects, are absolutely necessary. On the contrary, if debility be induced under circumstances which mark the presence of accumulated power, opium is one of the best agents yet known in the medical world.



BLISTERS, rubifacients and sinapisms, have also been found highly important in maintaining a centrifugal determination of excitement, as often as very great debility prevails ; as also in abstracting from any point of irritation, by exciting an equal or greater degree of irritation upon the surface. It has been hinted in the preceding part of this work, that pain has influence in extinguishing vital power. This is true, but when a degree of pain is excited, by an irritating cause, which is not sufficient to overwhelm the rising energies of the system, it often serves no other purpose, than to invite a long continued and distressing determination of vital power upon the part.

Hence it is, that when blisters are much needed in the decline of fever, a small application, will do very little good towards balancing the system, whilst they produce the most troublesome effects. The blistered part often becomes inflamed, and is very difficultly healed. Whereas a large blister, say eight by ten, or ten by twelve inches, very commonly extinguishes any superabundant stock of vital power, secures a determination of excitement, to the surface, and terminates the disease. Some remarks explanatory of this association of appearances, which constitute what physicians call the blistering point, will be made when I come to state the method of curing a case of inflammatory fever.



CINCONA or Peruvian bark, vitriolic acid, and all the train of tonic agents, act as stimuli on the stomach, and rouse the arterial system, at the same time that they effect an expenditure of vital power.



STRAMONIUM and cicuta, of the vegetable kingdom, and arsenic, lead, and cuprum ammoniacum, of the mineral, appear to extinguish vital power, without effecting any very evident increase of vital motion.



IRON, in all its various shapes, produces an increase of excitement, and if given in any case where inflammation prevails, or where disease has located itself, it is universally pernicious.

HEAT is a very powerful medical agent, and admits of a more universal application than any other yet discovered. I have said that heat is the necessary and universal ally of life.* This view of the subject, will meet the approbation of every man of common sense. In explaining the appearances attending a pleurisy, I have attempted to prove, that there must necessarily be a deficiency of heat, in every instance where there is a deficiency of excitement. Facts may be adduced, affording irresistible evidence of its truth.

Having tried the experiment an hundred times over, without meeting with one exception, I assert that in every case of fever with exhausted energy—and in all cases of direct debility, artificial heat in an appropriate degree, brings pleasurable sensation to the patient; and may be so managed, as to produce cordial effects. I will add, that in almost every case of predisposition to fever, it may be pleasantly and usefully employed.

In all cases of debility, whether directly or indirectly induced, there is a prevailing inclination to an introversion of excitement. Heat applied to the skin most effectually counteracts this tendency, and promotes a centrifugal determination. When the surface is abandoned through want of excitement, the skin collapses and seems to lose its natural elasticity.

* See a note, under the cure of typhus fever.

Heat artificially applied, corrects this inconvenience. In some instances it may seem at the first to produce a transient effect only ; but by careful and well timed repetitions, it will at length become durable. The system artificially replenished with this principle, is presently enabled, to generate a more competent supply for itself. Hence it is, that in every case of debility, it acts as a cordial, and produces manifest increase of hilarity. But as an excessive portion of wine, or any other cordial, might stimulate too much, and induce a morbid degree of indirect debility, so also an excessive application of heat, might produce similar effects. In all such cases, therefore, special regard should be paid to the feelings of the patient.

There are some remarkable and important advantages attending the use of this cordial, which no other can possibly claim. In every case, where properly used, it produces a full effect, without imposing any improper stress upon the central vessels. So that in securing the most pleasant diffusion of excitement, it offers no injury to any of the organs of life ; ordinary cordials, on the contrary, are dependent upon the struggle which they may excite in the heart and central vessels, for any and every centrifugal effect which they may produce.

Again, at the same time, that heat by its stimulant power, invites excitement to the surface, it softens and expands the skin, in a way preparatory to receive the returning the blood. Ordinary cordials must ac-

comply the effect, by compelling the feeble system, if indeed it can be done, to assume an action sufficient, not only to resume all those branches which it had abandoned, because it was not able to maintain them; but also to overcome, all the power of the common enemy, that is, all the resistance of an almost lifeless collapse of the vessels on the surface, possibly one fourth part of the system.

It is true, there have existed insuperable difficulties, to forbid the use of this agent, by any method heretofore known. But by the aid of my portable apparatus, any such difficulty is now perfectly corrected, and the application of heat can be made with such precision, as fitly to meet the most accurate intention.

I have said, that "in maintaining excitement, vital power is expended"—and of course that "extraordinary excitement, must produce a preternatural extinction of vital power." In any case of predisposition with accumulated power, therefore, it must be a very important acquisition, to have a remedy at hand, with which, such expenditure can be speedily and safely accomplished. Heat is this agent. By raising an intense degree of excitement on the surface, every necessary effect can be produced, with the utmost safety. This is sufficiently evinced, by the foregoing remarks, upon the influence of heat in a summer's day.

I have said that pain also has a considerable effect, in expending vital power. By an intense degree of

the pain of heat excited on the surface, together with the concomitant increase of excitement in the vessels of the skin, most instances of pre-disposition with accumulated power, may be certainly and safely corrected. It is known, that the skin is not easily injured in this way, and the strong determination to the surface, which is secured by this method, most effectually guards the system after the process is ended.

Again, other powerful remedies when once administered, are gone beyond the reach of controul, and must have their full effect, whether judiciously or injudiciously administered. But if too much heat has been administered, it is perfectly within our reach, to check its influence, by an immediate application of cold. Besides, if it should be found on trial, that through the influence of heat, the blood-vessels are too much excited, blood-letting may almost universally be safely employed, to correct this effect.

Again, in cases of gout, rheumatism, spasm, colic, &c. when there is a morbid determination or location of excitement, heat affords a safe agent, by which to correct the determination of power, and maintain a sufficient degree of excitement on the surface, till the system shall succeed in obtaining a balance.

'There is one other circumstance which so imperiously requires the use of this agent, that it must not be omitted.

After debility has long prevailed in the system, by whatever cause it may have been induced, the collapse of the vessels of the surface becomes so obsti-

nately fixed, that in many cases, no agent heretofore known, has been found sufficiently powerful to effect its correction. In obstinate bowel complaints, for instance, the skin is universally dry and hard, as if its vessels, which in their natural state must necessarily be tubular, had shrivelled and become impervious.—The skin, therefore, loses its elastic feel—becomes habitually and obstinately pale, and through its privation of circulating blood, is disarmed of its power to resist the cold.

When things have remained a long time in this condition, another additional mischief is done. As the system, in its astonishing powers for adaptation, can effect the return of the whole stream of arterial blood, sent into an amputated limb, though robbed of all its ramifications, below the point of amputation: As it can enlarge the lesser branches of the artery, when by the operation for an aneurism, one of its principal trunks is divided, and a part of it removed; so also the arterial blood, destined for the support of the surface, will ultimately find a return by a shorter passage, and the skin will be left never to be recovered, but by some extraordinary agent.

It may perhaps be feared, that a frequent use of heat, the only remedy upon which any rational calculation for a correction of this error can be made, may induce debility. My experience warrants the assertion, that the contrary is true. An excessive perspiration induced in this way, as well as in any other, might have this effect, but an appropriate ap-

plication always invigorates, increasing hilarity. A late truly valuable publication on Surgery, by Dr. Dorsey, of Philadelphia, volume 2d, page 29th, furnishes a quotation which gives strength to my assertion. "The warm bath" says he, "is used with views, partly analogous to those, which guide the practitioner in the employment of venesection. It induces a state of faintness and relaxation, under which the reduction may be attempted with advantage. The weakness produced by this remedy, is temporary, and is not attended by any subsequent debility."

By the bath, though performed with water, there is no loss of vital fluid. A preternatural expansion is given to the vessels of the surface, and by heat they are stimulated into increased action. The circulating blood is invited from the centre to the skin. The intestines, therefore, by being partially deprived of excitement, are for a time relaxed.— And when the bathing is ended, the blood again returns to its natural equilibrium, without any subsequent inconvenience. And if no consequent debility is to be feared, when the bath is of sufficient temperature and duration to produce relaxation, surely there can be no danger from a judicious application of the remedy in any case.

It should be remembered, however, that when there is an extensive congestion, the vessels involved in the centre of such an almost lifeless mass, must be very partially supplied with excitement. A suspension, or a great diminution of action, therefore,

whether produced by blood-letting, or by abstraction, might induce a speedy gangrene. But in all such alarming cases, none but a skillful physician, can be a competent judge of the proper method of treatment.

HAVING taken a view of such medical agents, as more particularly concern my work, I now proceed to give some additional practical observations, in a review of the same grades, which are laid down in the foregoing explanations.

And first, inflammatory fever in the form of an ordinary pleurisy, is ushered in by a predisposition with accumulated power. It occurs in the healthful season. And cold alone, or cold combined with fatigue, may almost exclusively be considered as the remote cause.

In this, and indeed in every case, it must be the most desirable object, to avoid the predisposition. And the more especially so in this, because in all ordinary circumstances, it is absolutely practicable. For this end, it is necessary to guard against too much exposure to the weather, especially if damp and moderately cold. But if such exposure is inevitable, the system should be supported by a comfortable meal.— And for a day or two, cider, wine, and ardent spirit should not be used, except by such as are in daily habits of using them*; and at night, before going to rest, special care should be taken, to secure an effec-

* A very pernicious habit this, which ought to be abandoned.

tual warmth at the fire. If, however, ordinary measures fail to produce a glowing excitement on the surface, or if an unusual length of time is required, to become warm in bed, on a nice inspection, it shall be found, that a collapse of the skin has already taken place. The roots of the hairs will be elevated, in a way resembling the skin of a goose plucked of its feathers, and a ligature tied on the arm, as in ordinary blood-letting, will not distend the veins. These appearances universally indicate a forming predisposition.

If a stretching, yawning and chilliness, with a dull or heavy aching in the loins and limbs attend, the predisposition is complete ; and without the interference of art, a fever may be confidently expected.

To correct this state of things, let the patient retire to bed, and receive an intensely hot bath. The pain of heat, and the increase of excitement upon the surface, in most instances, will sufficiently extinguish the accumulation of vital power, to restore a balance. It sometimes happens, however, in making this application, that, although a favorable determination is given to the excitement, yet in consequence of the great accumulation of power, too much stress is imposed upon some one weak point. In most instances, the brain, through the delicacy of its organization, is first sensible of this kind of increased action. If, therefore, the bathing produce considerable headache, whether a predisposition is readily induced or not, blood-letting ought to be performed without de-

lay.* And at the close of the process, some suitable cathartic should be administered, as jalap and calomel in robust cases, or calomel in a moderate portion, followed by some agreeable cathartic dose, in cases which are more delicate.†

Sometimes too, when the accumulation is very great, a single course of treatment, is not sufficient, completely to remove the predisposition—when this is the case, more or less of the symptoms stated above, will still be felt, the next one or two succeeding days, and will mark the necessity of a repetition of the practice, with more or less decision, and repetition, as the case may require.

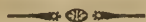


THESE instructions respecting the correction of the predisposition, are the more important, because it is within the reach of the most ordinary capacity, to understand and execute, all that is necessary, for preventing an attack of inflammatory fever. Whereas, after the fever is formed, it may sometimes require the most accurate judgment, to manage the patient in safety. To the people at large, the superior importance of my system, will be evident, chiefly in this, and this chiefly concerns the public. Who, in his

* It is commonly prudent, in robust cases, to let blood about the time the bath is fairly getting into operation.

† In robust cases, say calomel, 10 grs. jalap, 15 to 30 grs.—In delicate cases, calomel, 4 to 10 grs. and oil or some other suitable article three hours afterwards.

senses, will suffer a painful course of sickness to come upon him, when it may so pleasantly and certainly be prevented ?



IF, however, through neglect or accident, the fever should be formed, the symptoms heretofore described, as marking the state of predisposition, will be more evident. The chilliness will increase, and be attended with a pain in the back and limbs, and with difficult and quick respiration, thirst, &c. If these appearances are not immediately corrected, a pungent pain commonly will strike the breast.

At this stage of fever, blood-letting is a practice perfectly philosophic, and ought to be repeated, as often as the pain returns. In performing this practice, if the veins do not fill on tying on the ligature, the patient should first be placed in bed, and the bath put into operation. When the veins begin to fill, blood may be let, until the pain abates, and the bathing may be continued until a free perspiration is induced. Some suitable cathartic as in the predisposition, may be administered, and the patient may take half an ounce of a cooling solution once every third hour.* Early the next morning, the bath may be again put into operation, and the cooling solution may be continued. And as often as the fever rises, and the pain returns, the same treatment may be re-

* As a cooling solution—Take salt petre, 40 to 60 grs. cream of tart. 60 to 90 grs. tart. emetic, 3 to 6 grs., water, one pint ; 2 table-spoon full is the ordinary dose.

peated, with some diminution in extent and severity, according to the abatement of the disease.—Where this mode of practice is judiciously employed, the most satisfactory result will rapidly take place. I have frequently cured a forming pleurisy, by a single course, that is, in twenty-four hours. But that kind of accuracy, which always makes the best practicable defence, requires some experience, in as much, as it considerably depends upon an intimate acquaintance with the pulse. Such, however, is the accumulation of power in this grade of fever, that after securing a centrifugal determination to the excitement, blood may be let, till the painful symptoms abate, without any hazard. To the physician, I would say, that blood may be let till the tension of the artery subsides—until the morbid excitement is sufficiently subdued.

By blood-letting, febrile action is subdued for the time being. By pain of heat, and increase of excitement on the surface produced by the bath, the system is safely and pleasantly disarmed of its accumulated power. By the operation of a cathartic, and the subsequent use of the cooling solution, the heat and central vessels, are continually disarmed of any excess of vital power. And by maintaining a balance of excitement from the commencement of the cure the necessity of blistering is avoided.

If the disease is not much corrected by this kind of management in two or three days, a physician

should be called in, as greater accuracy might afterwards be required to finish the cure. But in all ordinary cases, it will produce decisive effects in the course of two or three days, and therefore, if very favorable appearances do not take place in that length of time, it may be concluded with certainty, that the case is really a bad one—that the lungs are much injured, and that severe blistering and accurate management is necessary for finishing the cure. In this event, the blisters which may be applied, should be made to abstract from the internal irritation, to an extent commensurate with the severity of the disease. The blister should be large—if a grown person, say eight by ten, or ten by twelve inches square.

And whether the case should assume such serious appearances or not, the same course of treatment should be continued, taking care, from time to time, to adjust the quantity of blood to be lost, and the extent and severity of the bath, to the strength of the patient.



THE ordinary practice in this grade of disease is, to let blood without taking any adequate measure to disarm the system of its accumulated power. It follows, therefore, that after a little, she rallies herself, and a second or third—sometimes a fourth bleeding is found necessary, in the course of the first twenty-four hours. The cause which makes such repetition necessary, is obvious. Almost an entire dependence is placed upon the loss of blood, for a two-fold intenti-

on ; that of putting down the morbid excitement, and that of disarming the system of its accumulated power. As if the principle “that by a subduction of stimuli, vital power or excitability is accumulated,” were entirely forgotten. A fortunate circumstance, however, has saved the lives of thousands, who otherwise must have perished, through the destructive tendency of such absurd practice. A blistering point is discovered ! Happy discovery. Let me enquire, therefore, what it is, that constitutes the blistering point ?

By the loss of blood, as often as the energies of the system are sufficiently rallied to produce a paroxysm of fever, the action of the healthful vessels is reduced, so that for the time, the power with which they propel the blood into the weakened branches, is not sufficient to increase the disease. The injured vessels therefore, have an opportunity given them, to recover their natural state, and appearances are very flattering. After four or five days, however, and sooner if the blood-letting be too much extended, it is commonly found, that those happy effects, which at first accompanied the loss of blood, are no longer produced. For the moment it may reduce the action, but presently every ill appearance recurs—the pulse contracts its diameter, and becomes more frequent ; the tongue becomes dry ; the skin sallow ; and the extremities hard, dry, and hot ; thirst increases ; expectoration is more scant and difficult ; and the patient grows more and more restless. To me the cause

of all these distressing appearances is plain. A state of things similar to the predisposition, is artificially induced. By every repetition of blood-letting, the action of the system is reduced more and more below par ; till at length, a collapse takes place to such an extent, that nothing short of an application to the skin, of a sufficient power to produce and maintain a centrifugal determination, can possibly save the patient. When this state of things is obviously threatened, the practitioner has arrived at the blistering point. A point at which he ought never to arrive, if he can possibly avoid it ; in as much, as it universally implies a loss of the balance of excitement. Not that I would be understood to say, blisters are useless, and may be wholly laid aside. But they should be wholly confined to an intention, either to correct a very obstinate morbid determination, or to abstract from great irritation. And if the system be properly managed from the commencement, the blistering point will not be found, except only for one of these two purposes. Similar management, with some additional considerations, will be proper in every form of inflammatory fever.

— ❦ —

PHRENITIS, or inflammation of the brain, is known by a violent pain in the head ; an inability to bear light or noise ; great restlessness, together with the ordinary appearances of disease, as already noticed in inflammatory fever.*

* In this form of disease, the pulse is sometimes so small, that an ordinary judge might doubt the propriety of letting blood.

In this case, blood should be let freely, and as often as the violence of the symptoms make it necessary. Measures should be taken for maintaining the surface, as in pleurisy, observing to defend the head, by making cold applications as frequently and as extensively as it may be found agreeable to the patient, especially, during every application of the bath.—Drastic cathartics should be daily administered. And in cases of great violence, the intestines should be continually under their influence for two or more days.* The feet of the patient should be kept carefully warm, and if the pain be obstinate, a large blister should be drawn upon the back of the neck.—Light should be excluded, and silence constantly observed. In every case of this description, so soon as it is ascertained that a few repetitions of blood-letting, bathing and cathartics do not bid fair to subdue the disease, a physician should be called in without delay.



HEPATITIS, that is an inflammation of the liver may be known by a dull pain on the right side, under the shorter ribs, extending into the right shoulder; sometimes affecting both sides, and felt in both shoulders, with great costiveness and dejection of spirits.

* Aloes, 60 grains, gamboge, 20 grains, calomel, 20 grains. The whole may make 24 pills; 3 to 6 may be given once in 6 hours, according to the violence of the case.—To be followed by a dose of oil or some gentle cathartic when discontinued.

Other appearances are such as commonly attend simple inflammatory fever, except that the pulse is commonly less tense, and the appearances generally less violent.

In this case the treatment will also be similar.— But the blood-letting will not be as frequently necessary. The same kind of drastic pills noticed in the preceding clause, will be highly useful, to be daily administered, as long as there is occasion. If the violence or obstinacy of the pain makes it necessary, a large blister should be applied over the region of the pain; and calomel should be freely used after the manner heretofore laid down.



IN gastritis, or inflammation of the stomach, as also in enteritis, or inflammation of the bowels, the superior value of the hot bath will always be evinced.— In these cases, the stomach commonly rejects every kind of medicine, whilst an alarming abandonment of the surface, and a corresponding violent introversion of excitement, are threatening speedy destruction. That affection commonly called bilious cholera may properly be introduced here, as an instance of inflammation of the lower intestines, requiring similar management. The application of intense heat to the surface, together with a repetition of blood-letting, as often as the pain makes it necessary, aiding the intention with appropriate doses of calomel, repeated every sixth hour with mild injections at the close of each period; the cure will commonly be ef-

fects in a short time. If it should be protracted, however, and especially if the vomiting or pain should be obstinate, a large blister should be applied over the region of the stomach or abdomen.

These reflections upon inflammatory fever, are predicated upon the supposition, that they occur as the primary affection, and of course, as having been induced through a predisposition with accumulated power. But it sometimes happens, that these appearances take place, as symptoms of fever, in different seasons of the year ; whether ushered in with predisposition, with exhausted or accumulated power.—It is, therefore necessary, in every instance, to mark well the quantity of energy which may be present in the system, and to adjust the treatment accordingly. If the quantity of vital power be nearly or quite entire, the treatment should always be decisive. If there be some degree of prostration, the management must be more delicate, as prostration is extended.*



INTERMITTENT fever, probably has for its primary remote cause marsh miasmata, which partially

* By using the necessary vigilance in blood-letting, and other evacuations, it may be known, whether the system generates vital power in ordinary quantity. Speedy and sprightly re-action after depletion, always indicates a goodly stock of vital power.—Depletion followed by a languid pulsation, a collapsed surface and emptiness of the veins, always evinces an exhausted state of the sensorium.

disarm the system. The disparity of temperature between the nights and the days, may be a secondary remote cause, hastening the production of an accumulation of vital power. Probably vernal intermittents occur in some regions, under the same circumstances which produce violent pleurisies in others.— So that, whatever other considerations might be associated with our views of an intermittent, cold has the most considerable agency in its production.

To prevent the formation of a predisposition to an ague, therefore, good fires should be kept up every night, throughout the whole year. The poor Africans upon our southern rivers, reap the benefit of this precaution, whilst their masters suffer all the pains of annual intermittents.*

If, however, such simple means fail to prevent the formation of the predisposition, the patient coming under its influence, will have an inclination to yawn and stretch; he will experience some aching in his back and limbs; his nails will put on a livid hue, and his skin and veins will exhibit appearances sufficiently indicative of that collapse, which always attends the forming state of fever. He should then be immediately put to bed, and receive a bath of sufficient extent to correct all these appearances. And this

* Some masters escape, not by the kindly influence of culinary fire, but through the deadly agency of *ardent spirits*. The effect for the moment is similar. But oh! their end! their dreadful end!

should be daily repeated, till such appearances cease to return. If, however, any of the symptoms increase upon the use of the bath, the patient should be bled, and take a dose of jalap and calomel, or calomel alone, and after the operation is over, the bath should again be used and repeated, as often as the case may require.

When no sufficient defence is made for the correction of the predisposition, and the fever is actually formed, the time of its accession should be anticipated, by the use of the bath, an hour or two before the commencement of the ague, to be managed as above advised. In this form of fever, there is a daily production of the predisposing circumstances, and, therefore, a proper use of the bath in the time of the intermission, will have an effect, similar to an effort to prevent an attack in the first instance of predisposition.

To correct the chilly state, when actually commenced, the bath should be put into operation, and so soon as the surface is sufficiently heated, to gain the advantage which may be derived to the pulmonary veins through the laws of association, blood may be drawn from the arm. By a diminution of the volume of blood returning to the heart, together with the sudden debility which this practice brings to the heart itself; the impulse of blood into the pulmonary artery is diminished, at the same time that the action of the pulmonary vein is increased. A free

circulation through the lungs, is speedily produced, and the chill immediately passes away.

If the bath and cathartic medicines fail, wine and bark* in the usual way, may be used in time of the intermission, which, under such circumstances, will almost universally succeed.

REMITTENT fever, perhaps occupies an intermediate grade, between simple inflammatory and continued fever. The predisposition is induced by the heat and poisonous gasses, prevalent in the summer. These as remote causes, induce debility. Cold induces a collapse on the surface—and that accumulation of power is thrown upon the central vessels, by which the storm of fever is raised. The more suddenly it is brought about, and the more robust the patient, the nearer the appearances will be assimilated, to simple inflammatory fever, and the contrary.

The predisposition to this grade of fever may be prevented by avoiding all excess of labour, diet, loss of sleep, &c. and by warming at the fire every morning and evening. After the predisposition is formed, or the fever has actually commenced, the same principles and precautions are to be observed, which have

* Perhaps the following is the best general method of taking this article :—bark, 1 ounce ; cream of tartar, 1 ounce : powdered cloves, 1 dram and a half ; ground together, and divided into eight doses. Four doses a day, to be taken in time of the intermission.

been stated above—remembering only, that as there is greater precaution, less depletion can be safely borne than in inflammatory fever. And that the degree of decision should be regulated, by the violence of the symptoms in every case.

Bleed and bathe—or bathe and bleed—or bathe only; according to the urgency of the case, and the state of the surface. Then give calomel and jalap, or calomel followed by a dose of oil* every day, if necessary, till the symptoms abate. Afterwards use the bath in the morning, and a gentle cathartic in the course of the day for two or three days, gradually laying aside the practice as the symptoms disappear.



CONTINUED fever, is ushered in, by a predisposition, which differs from that of a remittent fever, in nothing, except only, that the exhaustion of vital power is greater. The same management, therefore, will be proper to prevent predisposition, and the treatment may be similar for curing the fever when formed, remembering only, that there is less necessity of blood-letting in this, than in the former case—and that drastic cathartics for the same reason, are not to be as frequently used.† Thirty drops of the spirit of

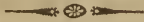
* When oil is offensive, any other gentle dose may be preferred.

† In this, and some instances towards the close of remittent fevers, the following is a proper cathartic dose:—rhubarb, 25 or 30 grains; manna, 2 drams; Rochelle or glauber salts, 2 drams. The whole for one dose, for a grown person, to be dissolved in a little hot water.

nitre diluted with a little cold water may be given once every second hour, and plentiful dilution, such as chicken water, table tea, apple water, toast and water, &c. may be constantly used at discretion.

In this grade of fever, the bath should be used every morning, but not often with an intention to produce a profuse sweat. A very gentle perspiration is all that is necessary. The same may be repeated at night as often as it is agreeable to the patient.

In remittent and continued fevers, it sometimes happens that determinations take place, threatening injury to some of the vital organs. If this should happen, and continue after using the bath a few times, a large blister should be drawn, for the reasons heretofore stated.



TYPHUS fever is the most distinct exhibition of disease, consequent upon a predisposition with exhausted power. In this form of fever, debility so prevails, and the abandonment of the surface is so complete, that the skin is almost left without a supply of blood. The eye-lids of the patient are not sufficiently expanded to cover the eyes—the skin appears to cleave fast to the bones of the sternum or breast, and the surface generally, is dry and husky. The narrow limits to which the feeble excitement is reduced, are scarcely sufficient to expend the slow production of vital power, and determinations upon the muscles, evinced in nervous twitchings, or wild mental effort, in form of a delirium, are employed by

the system, to maintain an equilibrium. The heat which is collected and retained on the surface, is accounted for in a preceding part of this work.

This grade of disease, may have for its remote cause, the pernicious gasses exhaled in a cellar or prison—or some region of atmosphere more expanded, sometimes limited to a family or neighborhood—sometimes spread over an extensive section of country.—It may also be produced by loss of sleep, by excessive indulgence, by unwholesome or insufficient diet, &c. &c.

The predisposition is attended by unaccountable debility, great propensity to sleep, giddiness of the head, an unusual inclination to be near the fire. As the case progresses, some pain is felt in the back part of the head and neck, aching in the loins and limbs, &c. &c. which gradually increase, till the disease is completely formed.

When practicable, the remote cause ought to be avoided—when this cannot be done, the patient should avoid fatigue. Sometimes rest and composure for a sufficient length of time, will be completely to correct the predisposition. But a moderate use of the bath every morning and evening, would contribute much towards the certainty of the effect.

After the fever is formed, first administer a moderate bath, then an emetic, followed by a gentle cathartic. Afterwards a daily repetition of the bath

when necessary.* An occasional repetition of a suitable cathartic, cordial drinks, as panada, chicken broth, wine and water, and to quench thirst, a little of the spirit of nitre, as before advised. In this and in every grade of fever, where depletion is not necessary, a large blister drawn on the region of the stomach frequently contributes to hasten recovery.

HAVING thus given, a general view of disease—together with some instructions, for the formation of a proper intention, in attempting its cure; having said a few things, respecting the mode of operation, of some articles of medicine, and specified a simple method of applying them, in the cure of fever; I shall now drop some desultory remarks, and come to a conclusion.

* That artificial heat is an important agent, in the cure of fever with prostration, might be proved by induction, from the writings of Dr. Rush. See his lecture upon animal life.—“Heat,” says he, “is an uniform and active stimulus, in promoting life. It is derived in certain seasons and countries, in part from the sun, but its principal source is from the lungs, in which it appears to be generated by the decomposition of pure air, and from whence it is conveyed by means of the circulation to every part of the body.” But if the whole system is prostrated, the column of heat decomposed in the lungs, must be less than natural. In consequence of the feebleness of the excitement, it cannot be properly conveyed to the remote points of the system. It must, therefore, necessarily follow, that an external application of an appropriate portion, will afford the most natural aid in this situation. In proof of this, it is always agreeable to the patient.

Yellow fever, is a high grade of morbid excitement, consequent upon some poisonous agent, suddenly produced, and acting upon persons with good stock of vital power. After the necessary depletion, the hot bath has been found beneficial, and I would expect great advantages from it, if administered upon the principles which I recommend.



GOUT and Rheumatism, are the result of morbid determinations upon the joints, or muscles, or fascia, or sheaths of the muscles, or tendons. The bath with or without depletion, according to the state of excitement, will always afford relief. It should be used so far and repeated so often, as may be necessary, to receive and maintain, a determination of excitement, upon the surface.



MEASLES, is a fever of the skin. If it be slow in coming to a crisis, a bath or two brings it forward. If it be followed by much debility, inducing an introversion of excitement, similar repetitions made morning and evening, will maintain the excitement in a state of balance, till the tone of the system is recovered, and all danger is avoided. The bath in this case, should never be continued longer than is necessary, to produce a pleasant degree of moisture.

BOWEL complaints are instances of introverted morbid excitement. In these it is all important to secure a return to the surface. The bath will aid in accomplishing this intention.

COLICS, may be the effect of inflammatory action, or of spasm. In either case, the bath will afford relief. In the one, aided by blood-letting, it diffuses excitement and lessens the force of the determination—In the other, it extinguishes the accumulation of vital power, upon which the spasm or cramp depends.

ART can accomplish no more than three great and leading intentions. One is to diminish or put down excessive action. Another is to extinguish any excess of vital power. The third is to support the system in any case of debility. A fourth might be added, as the result of a combination or modification of these, which is, to correct any morbid determination by securing an equalization of excitement. The great utility of this powerful agent, must therefore be evident. And every physician must see, that it will admit of more universal application than blood-letting or any other individual remedy.

Varying its degree and duration, according to the demands of the intention, it will be useful in colds, catarrhs, croups, asthmas, pleurisies, &c. In cramps, spasms, colics, cholera-morbus, &c. In nervous head-ache, and all nervous affections. In habitual paleness or sallowness of complexion. In female

complaints of a certain description. In serofulous and other glandular and ulcerous affections. In excessive fatness, and in old age. In goet, rheumatism and fever, &c. &c.

In a word, if an excess or diminution of vital power; If an increase or deficiency of action, with or without a morbid determination of excitability or excitement, must be present, in every possible mode of disease; It necessarily follows, that disease itself is a unit. And, therefore, that there must be in nature, some great and universal agent, which may be so modified, as to meet every case. Heat may be so used. The pain of heat on the surface can safely extinguish vital power, and thus indirectly diminish the force of excitement. And in an agreeable temperature, it is an universal cordial. Finally, it can be made to have an universally diffusive tendency, and thus correct any morbid determination.

I shall conclude with some additional instructions for the use of the bath.

In making the application, the bath should most commonly be placed at the feet; a suitable frame should be made, to support the bed cloathes, so as to give the gas a convenient passage all around the body of the patient. And a sheet of paper should defend the bed cloathes from being scorched by the heat, which is considerable at the mouth of the pipe. The choice of the cup, and the quantity of the spirit, should be proportioned, as nearly as may be, to the

intended duration and temperature of the bath. In robust patients, it is commonly safest, to take some blood, before the commencement of the process. In any and every case, if it be continued in an intense degree, and for a sufficient length of time, some throbbing of the head will certainly be produced. In delicate cases, it ought not to be pushed up to this pitch. But the fire should be occasionally extinguished, and afterwards lighted up, as it may be found agreeable to the patient.

When the bath is to be a long time continued, as in cases of feeble and very old persons, the smallest cup ought to be used. And in most instances it ought to be repeated once every sixth hour, sometimes once every third hour.

Sometimes it may be beneficial, to move the apparatus from the feet to the side of the patient, and so on alternately, as the judgment of the practitioner will quickly discover.

It is scarcely necessary to observe, that the bowels should be regulated by the use of proper medicines, as often as there is need.

It may sometimes happen, in a case of pain in the breast or bowels, for which the bath may be deemed proper, that it may produce partial sweating and temporary ease—but in a little time, all appearances of perspiration will disappear, and the pain suddenly increase. This circumstance may be considered as a certain indication of the necessity of blood-letting ;

which will be found more effectual after the bath than it would have been prior to its application.

In cases of long standing debility, it sometimes happens that the bath is scarcely put into operation, before the patient feels distressing sickness, threatening danger of fainting. When this happens, let the fire be extinguished, and give the patient a glass of wine and water, and when sufficiently refreshed, rekindle the bath. After a day or two it will be discovered, that more intense heat and greater duration of its application, will be borne with less anxiety.—By well timed repetitions of this course, vigor will be regained by the system and health recovered.

In some instances, when the bath is administered to patients, inclined to be feverish, without previous blood-letting, and especially, when the bath has been pushed a little too far, an uncomfortable restlessness is felt. This circumstance, as well as a head-ache, or any other pain, will commonly indicate the necessity of blood-letting. Also a proper dose, of some agreeable pill, should be taken immediately, or some suitable cathartic, the following morning.

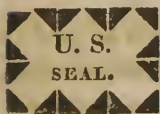
In all cases, considerable regard should be paid to the feelings of the patient. The operation should never be continued after it becomes disagreeable, excepting those cases, in which the intention is, to produce a profuse perspiration. After having acquired a proper understanding of the principles laid down in this work, experience will quickly teach every other necessary precaution.

THE UNITED STATES OF AMERICA:

To all to whom these Letters Patent shall come.

WHEREAS, SAMUEL K. JENNINGS, a citizen of the United States, hath alledged, that he hath invented a new and useful improvement, being *A Portable Warm and Hot Bath*; which improvement he states, has not been known or used before his application; hath made oath that he does verily believe that he is the true inventor or discoverer of the said improvement; hath paid into the Treasury of the United States, Thirty Dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for the purpose:—*These are therefore* to grant, according to law, to the said Samuel K. Jennings, his heirs, administrators or assigns, for the term of fourteen years, from the twenty-first day of January, one thousand eight hundred and fourteen, the full and exclusive right and liberty of making, using, and vending to others to be used, the said improvement; a description whereof is given in the words of the said Samuel K. Jennings himself, in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the United States to be hereunto affixed.



Given under my hand at the city of Washington, this twenty-first day of January, in the year of our Lord, one thousand eight hundred and fourteen, and of the Independence of the United States, of America, the thirty-eighth.

By the President,

JAMES MADISON.

CITY OF WASHINGTON—To wit :

I do hereby certify, that the foregoing Letters Patent were delivered to me on the twenty-first day of January, in the year of our Lord, one thousand eight hundred and fourteen, to be examined ; that I have examined the same, and find them conformable to law ; and I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit : on this twenty-first day of January, in the year aforesaid.

WILLIAM PINKNEY,

Attorney General of the United States.

THE schedule referred to in these Letters Patent, and making part of the same, containing a description in the words of the said Samuel K. Jennings himself, of his Portable Warm and Hot Bath—

Is an apparatus, which is to be used as a stove and pipe, to convey the heated gas arising from burning ardent spirit, to the body of the patient sitting in a chair, or lying on a bed, couch, sofa or cot, and covered sufficiently, so as to retain the heat, agreeably to the intended temperature of the bath.

It may be made of tin, sheet-iron, copper or lead, or wood. A cup of suitable diameter, containing a proper quantity of warmed ardent spirit is placed in the stove, the pipe of which is introduced under the bed cloathes or covering of the patient, the spirit is then to be set on fire. The gas ascends as smoke in a chimney, and is conveyed to its destination by the stove.

SAMUEL K. JENNINGS.

Witnesses,

REUBEN FERRY,

JNO. F. LAMB.

ERRATA.

Page 30, 3d line of the note, for "*maintaining*," read, "*in maintaining*."

Page 38, 2d line of last clause, for "*when*," read "*where*."

Page 42, 10th line, for "*missentery*," read "*mesentery*."—7th line from bottom, for "*this vital power*," read "*vital power*."

Page 48, 6th line, for "*an induced*," read "*considerable*."

Page 52, 7th line, for "*pernicious*," read "*most beneficial*."

Page 54, 8th line from bottom, for "*actions*," read "*action*."

Page 61, 10th line, for "*this*," read "*the*."

Page 63, lowest line, for "*the blood*," read "*blood*."

Page 67, 13th line, for "*performaned*," read "*performed*."

Page 69, 2d line from bottom, for "*predisposition*," read "*perspiration*."

Page 72, 7th line from bottom, for "*heat*," read "*heart*."

Page 82, 2d line, for "*precaution*," read "*prostration*."

Page 84, 7th line from bottom, for "*will be completely to correct*," read "*will completely correct*."

Page 85, 7th line from bottom, for "*colume*," read "*volume*."

Page 85, 14th line, for "*receive*," read "*secure*."

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